

Installation- and Operating Instructions



CE

osf POOLcontrol®-2000

Filter Control 400V

Item no. 3100000400

Function:

The **osf** filter control PC-2000 enables a time-dependent switching on and –off of a 400V three-phase current filter pump by using a freely programmable daily or weekly programme.

The filter control can be remote controlled by an external control element.

While the filter pump is operating the heating of the pool is controlled by the electronic temperature control. During the filter pauses the heating is automatically switched off by the internal locking. Due to the given possibility to connect a safety temperature limiter or a flow monitor, the heating is additionally protected against overheating. On the front plate the requested temperature of the pool water can be selected or the heating can be switched off. For the connection of the heating both a living contact (clamp U2) and a floating contact (clamps 19+20) are available. For the solar collector operation there are terminal clamps for a **osf** solar actuator available.

Terminal clamps for an electronic level control NR-12-TRS-2 (item no. 3030075020) enable a comfortable and automatic control of the water level in the pool. Additional terminal clamps allow to connect a flow monitor or a press key. Thus the filter pump is additionally protected against damages caused by an operation of the filter system without water.

Terminal clamps for a **osf**-EUROTRONIK-10 enable an upgrade of the filter control to an automatic filter- and backwash control.

Additional terminal connectors allow to connect accessory devices, e.g. underwater floodlights and dosing equipment. A consumer (230V/max. 3A) connected to clamp U4 may optionally be switched on and –off with a key placed in the front lid. The clamp U3 only drives 230V during the filter periods, outside the filter periods it is floating. The clamps 21 +22 are floating and thus can be individually used. During the filter periods the relay contact between the clamps 21 and 22 is closed, out off the filter periods this relay contact is open. This contact can be charged with a maximum voltage of up to 230V and a force of up to maximum 400 W ($\cos \varphi=1$). Optionally the clamps 21 + 22 can be used to connect a collective error signal.

The terminal clamps for the protective winding contact allow to connect a protective winding contact switch that is integrated in the motor winding of the filter pump. If this contact opens, e.g. due to overheating of the motor winding, both the filter pump and the heating and dosing equipment will automatically be switched off. As soon as the winding protective contact closes after cooling of the motor winding, the aggregates will be switched on again automatically. A manual reset is not necessary. The terminal clamps for the protective winding contact are charged with 230V.

Terminal clamps for a remote switch enable a remote control of the filter system.

The operation of filter pump and heating is indicated by pilot lights in the front lid – so a check is possible at any time.

The filter pump is protected against overload by an electronic motor protection (current range continuously adjustable up to 8A).

Technical Specifications:

Dimensions:	325mm x 280mm x 160mm
Operating voltage:	400V/50Hz
Power consumption of the control unit:	approx. 10VA
Breaking capacity:	
Pump:	max. 3.0 kW (AC3)
Heating:	max. 0.4 kW (AC1)
Dosing equipment:	max. 0.4 kW (AC1)
Additional output:	max. 3A (AC1)
Protection type:	IP 40

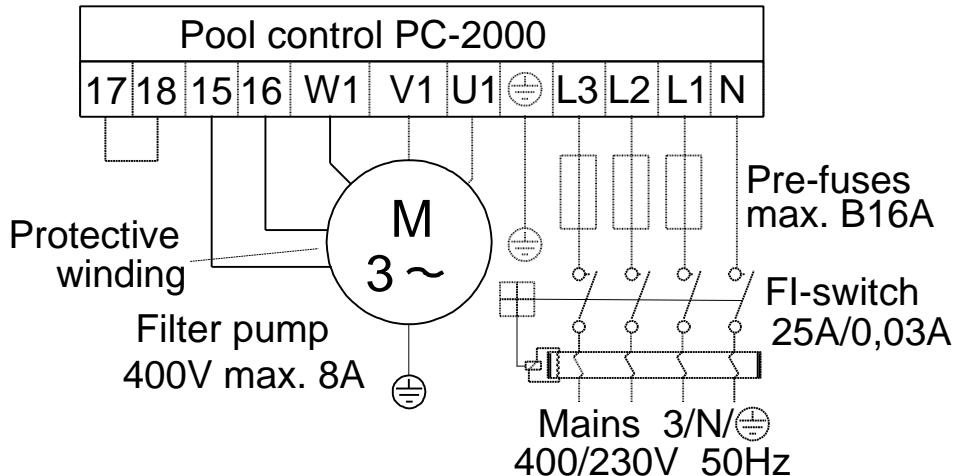
Installation:

The control unit has to be installed humidity protected, depending on its protection type. The power supply of the device has to be effected by an all-pole main switch having a contact of opening of at least 3mm and a earth leakage circuit breaker with $I_{FN} \leq 30mA$. **Before opening the housing it is absolutely necessary to switch the device to zero potential.**

Electrical connection:

The electrical connection as well as any adjustment and service work may only be carried out by an accredited electrical specialist! The enclosed connecting diagrams and the prevailing corresponding safety regulations are to be observed.

Mains supply for use of a 400V-three-phase current pump:

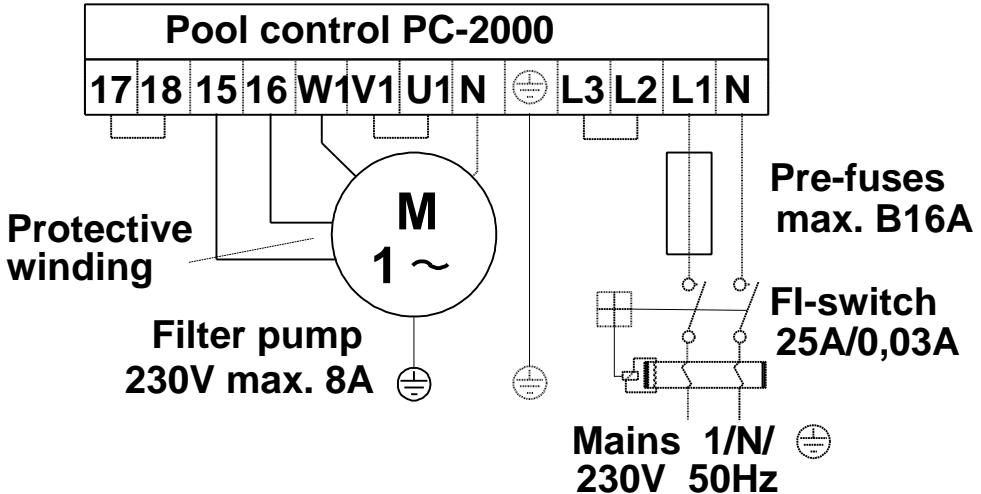


The factory-provided inserted bridge between the clamps 15 and 16 has to be removed if a pump with protective winding contact is connected. If no connection is carried out, it has to be remained screwed in. The clamps drive mains voltage!

Instead of the bridge inserted between the clamps 17 and 18 it is possible to connect a flow monitor or a pressure controller, to additionally protect the pump against dry run. In the filter

operation this contact has to be closed at the latest 10 seconds after the filter pump has started, otherwise the filter pump will be switched off and the error signal light flashes. In the backwash operation this contact is not interrogated. The clamps drive mains voltage!

Mains supply for use of a 230V three-phase current pump:

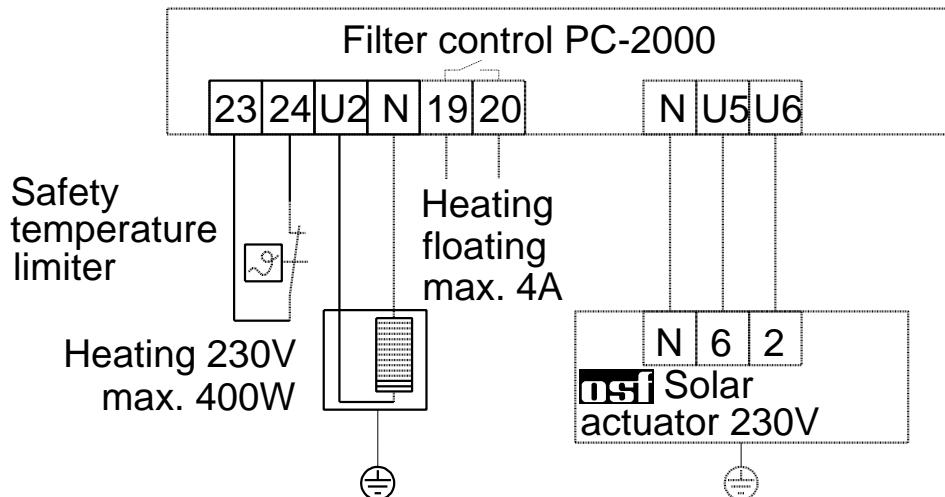


The factory-provided inserted bridge between the clamps 15 and 16 has to be removed if a pump with protective winding contact is connected. If no connection is carried out, it has to remain screwed in. The clamps drive mains voltage!

Instead of the factory-provided bridge inserted between the clamps 17 and 18 it is possible to connect a flow monitor or a pressure controller. In the filter operation this contact has to be closed at the latest 10 seconds after the filter pump has started; otherwise the filter pump is switched off and the error signal light flashes. This contact is not interrogated in the backwash operation. The clamps drive mains voltage!

So that the electronic motor protection operates properly, the motor current has to be led via all 3 contact points of the filter control (clamps L2 and L3 as well as U1 and V1 bridged, pump connected to W1).

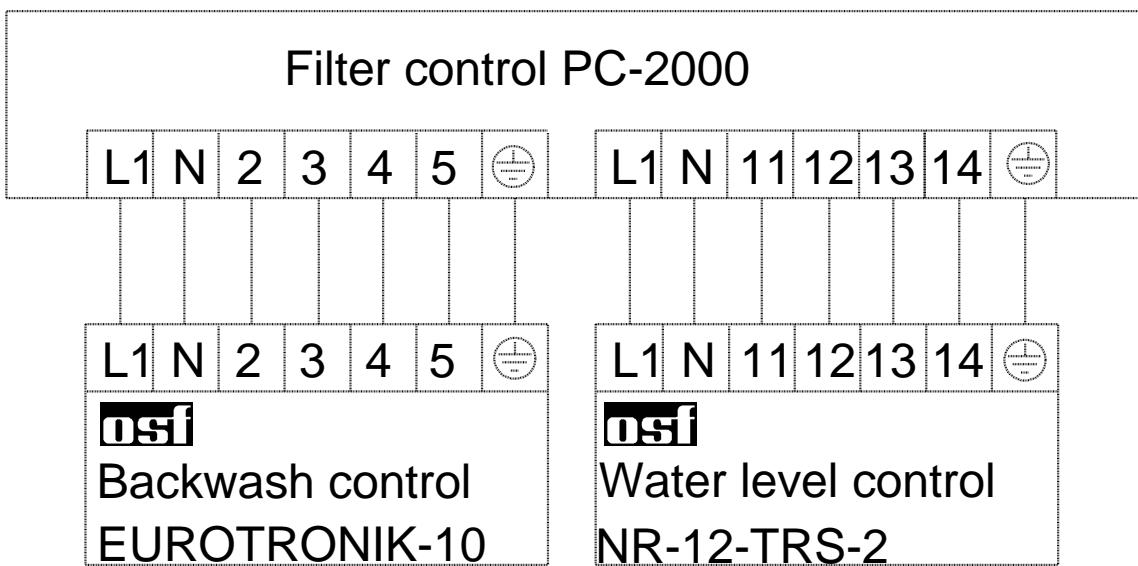
Connection of the heating:



The factory-provided inserted bridge between the clamps 23 and 24 has to be removed if a safety temperature limiter is connected. If no connection is carried out, it has to remain screwed in. The clamps drive mains voltage! If the contact of the safety temperature limiter opens, the heating is switched off at clamp U2. The floating relay contact between the clamps 19 and 20 is not influenced by the safety temperature limiter. On dimensioning the safety device you have to take into consideration that the current of the heating flows via the clamps 23 and 24.

For the operation of the solar heating it is possible to connect a 230V **osf**-solar actuator to the clamps U5 and U6. When solar operated the clamp U6 drives mains voltage and clamp U5 is floating. If the solar heating is not operated, clamps U6 is floating and clamp U5 leads mains voltage.

Level control and backwash control:



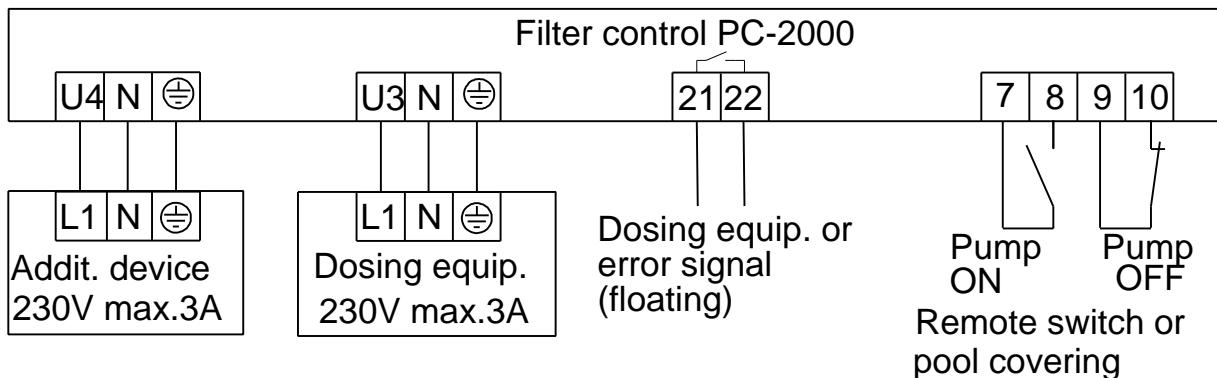
The factory-provided inserted bridge between the clamps 13 and 14 has to be removed if a level control NR-12-TRS-2 is connected. If no level control is connected, the bridge has to remain screwed in between these clamps. In this case the clamps 11 and 12 remain unused. The clamps drive mains voltage!

The factory-provided inserted bridge between the clamps 3 and 5 has to be removed if a EUROTTRONIK-10 is connected. If no EUROTTRONIK-10 is connected, the bridge between these clamps has to remain screwed in. In this case the clamps 2 and 4 remain unused. The clamps drive mains voltage!

An opening of one of the contacts between the clamps 13 and 14 or 3 and 5 causes an immediate switching off of the filter pump, the dosing equipment and the heating.

Closing of one of the contacts between the clamps 2 and 4 or 11 and 12 causes an emergency switching on of the filter pump whereas the heating and the dosing equipment remain switched off.

Additional connecting possibilities:



A 230V accessory device (e.g. underwater floodlight) can be connected to clamp U4, this device can be optionally switched on and –off with a key in the front lid (or in the external control element).

A 230V accessory device (e.g. dosing equipment) can be connected to the clamp U3 and during filter operation it can be switched on together with the filter pump.

Between the clamps 21 and 22 there is a floating relay contact in the control unit. This can optionally be used:

- for the control of additional dosing equipment (in this case it is closed during filter operation),
- to serve as a collective error signal (then it is closed in case of defects).

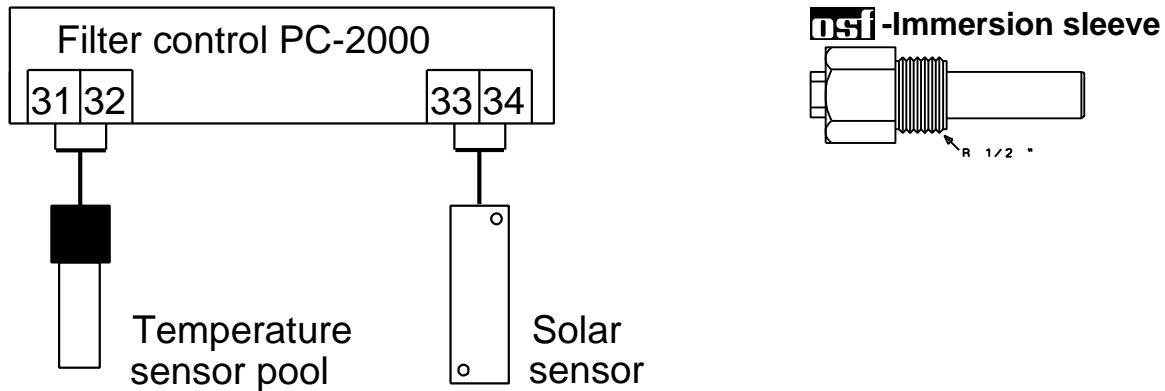
This contact can be charged with a maximum of 230V/4A.

A remote switch or the pool covering can be connected to the clamps 7, 8, 9 and 10. These clamps drive mains voltage!

An opening of the contact between the clamps 9 and 10 causes an immediate switching off of the filter pump, the dosing equipment and the heating.

A closing of the contact between the clamps 7 and 8 causes the filter system being switched on.

Temperature sensor:



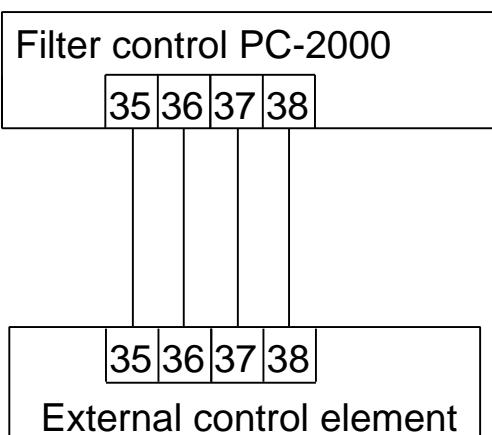
The pool temperature sensor is connected to the clamps 31 and 32. As a standard the temperature sensor is delivered with a cable length of 1.5m. If required, this can be lengthened with a two-core cable (cross section min. 0.5mm²) up to a maximum of 20m. It should be avoided to lay the sensor cable near power lines to exclude possible disturbance.

As an exact temperature control is only possible with a good heat transfer between temperature sensor and pool water, you have to install a **osfi**-immersion sleeve R 1/2 " (item no. 3200200003) into the piping system.

Any polarity of the sensors is possible.

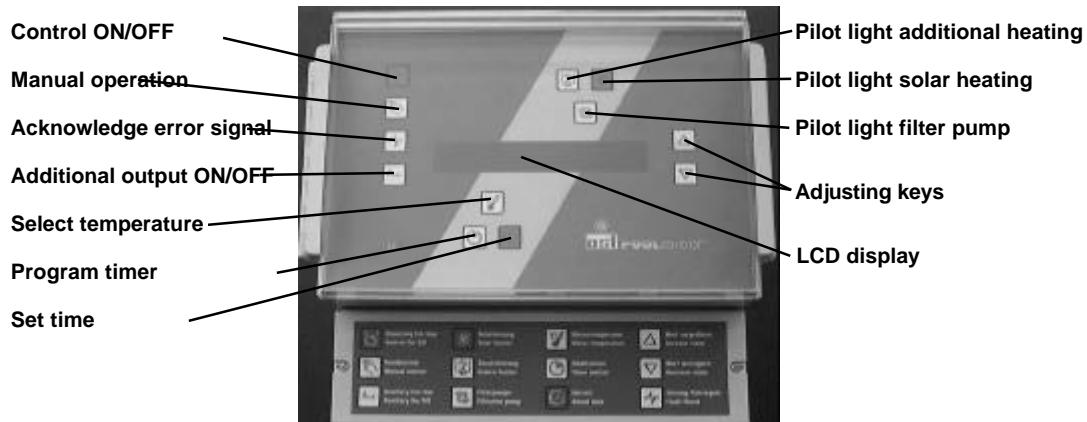
Additionally a solar temperature sensor (item no. 3100000030) can be connected to the clamps 33 and 34. As a standard the temperature sensor is delivered with a cable length of 20m. If required, it may be lengthened with a two-core cable (cross section min. 0.5mm²) up to a maximum of 50m. It should be avoided to lay the sensor cable near power lines to exclude possible disturbance. The solar temperature sensor has to be installed at the output of the solar collector and must have a good thermal contact to the back-flowing water.

External control panel:



An external control panel may be connected in-wall (item no. 3100000420) or on-wall (item no. 3100000410) to the clamps 35-38. A four-core telephone cable (item no. 3100000500) with a length of maximum 50m is used for the connection to the filter control. It should be avoided to lay the connecting cable near power lines to exclude possible disturbance.

Control elements on the front plate:



LCD 23,4°C 14:46 Normal operation display with current water temperature and time.

LCD 23,4°C subsequent run The filter pump temporarily continues to run after the heating has been switched off.

LCD forced start 13:37 The filter pump has been switched on by the backwash control EUROTTRONIK or the level control NR-12-TRS-2.

LCD pump locked 13:37 The filter pump has been switched off by the backwash control EUROTTRONIK, the level control NR-12-TRS-2, by a remote switch connected to the clamps 9 and 10 or by the protective winding contact.

LCD pump overloaded! The filter pump has been switched off by the electronic motor protection. To switch on the pump again, the key must be pressed after the pump has cooled.

LCD pump doesn't deliver The filter pump has been switched off by the press key connected to the clamps 17 and 18 or by the flow monitor. To switch the pump on again, the key must be pressed after the error has been cleared.

LCD mains phase missing! The filter pump has been switched off because there is no current in all 3 phases of the three-phase supply network. To switch the pump on again, the key must be pressed after the error has been cleared.

LCD sensor defect 13:37 The temperature control is out of operation because the temperature sensor is not connected or is defect.



Control ON/OFF

With this key the complete control can be switched on and – off. **Attention!** By doing so, the control is not switched to zero potential. If the control is switched on, this key flashes.



Manual operation

With this key the filter pump can be manually switched on, independently from the timer. The key flashes with manual operation.



Acknowledge error signal

If the control detects an error (e.g. motor protection) this key will flash in red. This error signal must be acknowledged with this key, so that the normal operation of the equipment can be

continued.



Additional output ON/OFF With this key an additional output (clamp U4, 230V) is controlled, that can for instance be used to switch an underwater floodlight. The key flashes with consumer switched on. The function of the additional output is not interconnected with the filter pump.



Pilot light pump This pilot light indicates the operation of the filter pump.



Pilot light additional heating This pilot light flashes if the additional heating is switched on.



Pilot light solar heating This pilot light flashes if the solar heating is operated.



Select temperature With this key the temperature of the pool water is selected:

1. Press  key ⇒ the display shows 23,4° set temperature
2. With the keys  and  the requested temperature within a range of 0.1°C and 40°C can be selected now.
3. If the heating is to be completely switched off, you have to reduce the temperature with the key  as long as the display indicates heating off.
4. To save the requested temperature, press the key  again. If on setting the temperature no key is pressed for more than 10 seconds, the last selected temperature is automatically saved and the normal operation display appears again.
5. If a solar sensor has been connected to the control, the current temperature of the solar sensor can be displayed with this key:
6. Press  key twice ⇒ the display indicates the temperature at the solar sensor, e.g. 32,8° solar sensor.
7. To close this display press the  again. If no key is pressed for more than a minute, the normal operation display appears automatically.



Setting time

With this key the current time is set:

1. Press  key ⇒ the display indicates time: 14:26. If the timer is operated as a weekly timer, the corresponding day of the week is also displayed.
2. With the keys  and  you can now set the current time.
3. To save the time, press the  key again. If on setting no key is pressed for more than 10 seconds the last displayed time is automatically saved and the normal operation display appears again.



Programming of timer With this key the built-in timer is programmed; for this you always have to enter the switch on time and the corresponding switch off time in pairs:

1. Press key ⇒ the display indicates **1. pump on: ---**. If the timer is operated as a weekly timer, the corresponding day of the week is also displayed.
2. Now you can set the requested switch on time with the keys and .
3. Press key again ⇒ the display indicates **1. pump off: 0:00**
4. Now the requested switch off time can be set with the keys and .
5. Press key again ⇒ the display indicates **2. pump of: ---**
6. Now additional switching times can be programmed as described under points 2-5.
7. To save the switching times, press the again. If on setting no key is pressed for more than 10 seconds the last displayed switching time is automatically saved and the normal operation display appears again.

If some switching times have already been programmed, these may be deleted with the key:

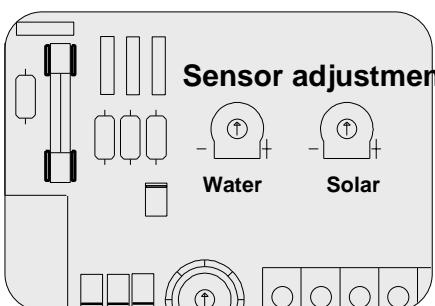
1. Press key as long as the switching time, that is to be deleted, is displayed **2. pump on 8:25**
2. With the keys and set the switch on time to **2. pump on: ---** (between 23:59 and 0:00).
3. To delete the switch on time, press the key again – the corresponding switch off time is also automatically deleted.



Adjusting keys

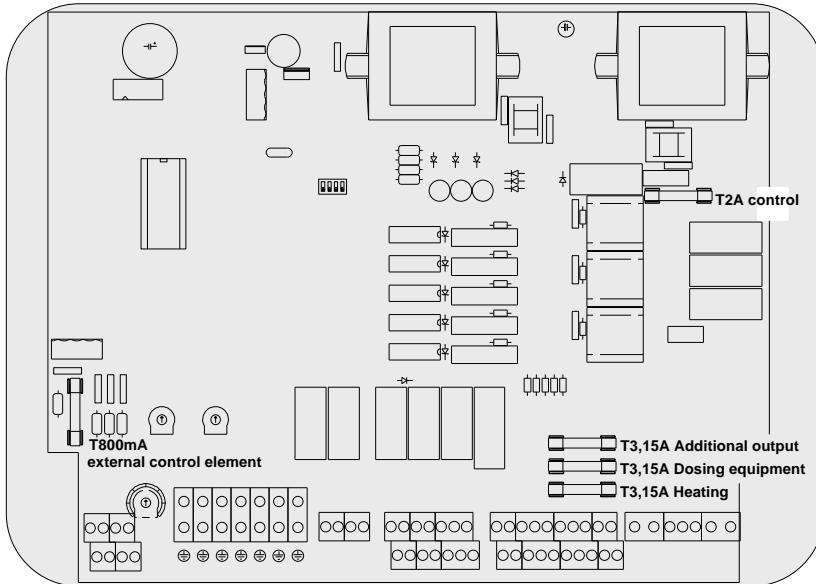
With these keys you can program the water temperature, the time and the switching times.

Adjustment of the temperature control:



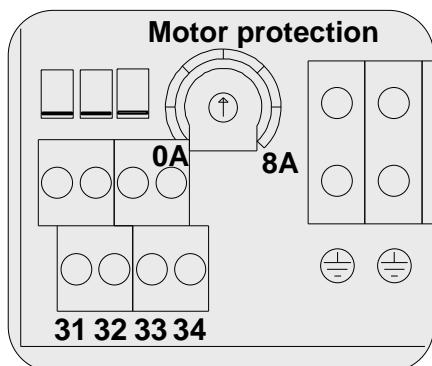
The electronic temperature control and the temperature sensor have been matched factory-provided. If one of the sensors is exchanged or if a sensor cable is lengthened, you have to carry out a new adjustment with the potentiometers in the control unit, if necessary. A clockwise turning of the potentiometer causes an increase of the displayed water temperature. If the potentiometer for solar sensor is turned clockwise, a higher collector temperature is displayed. As the solar temperature control only works properly with precisely adjusted sensors, this adjustment should only be carried out by a trained service technician.

Fuses:



The electronic control is protected by a 2A micro-fuse on the circuit board inside the device. There is each one 3.15A micro-fuse available for the heating, the dosing equipment and for the additional output. The short-circuit protection for the filter pump has to be ensured by customer provided pre-fuses of max. 16A.

Electronic motor protection:

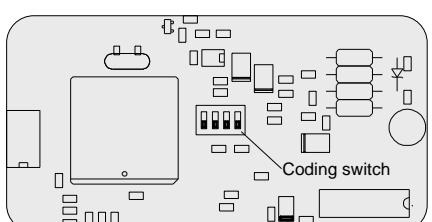


The three-phase current filter pump is protected against overload by an electronic motor protection. For this the motor protection has to be adjusted to the nominal current of the filter pump (see type plate of the pump). The adjusting controller for the motor protection is placed in the clamping box to protect it against inadvertent adjustment. If the nominal current of the filter pump is not known, the motor protection can be adjusted according to the following process:

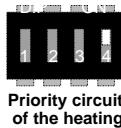
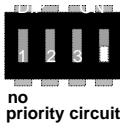
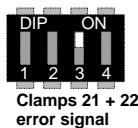
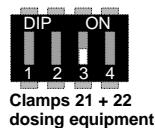
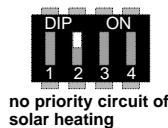
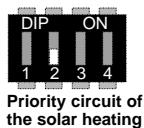
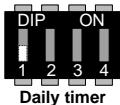
1. Turn adjusting screw of the motor protection to the right stop.
2. Switch on pump.
3. Turn adjusting screw slowly anti-clockwise as long as the motor protection is triggered and the red error signal  flashes.
4. Turn adjusting screw clockwise by some angular degrees (approx. 10%).

Unlock the motor protection with the  key – the error signal stops flashing and the filter pump runs.

Coding switch:



For a universal use of the filter control PC-2000 for various filter systems, there is a coding switch available on the circuit board that can be used to set various operating modes. The following functions can be set:



Daily or weekly timer:

With coding switch 1 you can choose if the built-in timer should use the same filter periods each day (daily timer), or if the filter periods are programmed for each single day of the week (weekly timer). In the position OFF (lower switching position) it operates as a daily timer, in the position ON (top switching position) as a weekly timer.

Priority circuit of the solar heating:

With coding switch 2 you can activate a priority circuit of the solar heating. In the position ON (top switching position) the solar heating is only operated during the filter periods. In the position OFF (lower switching position) the solar temperature control is also operated off the filter periods so that the solar power can also be used off the set filter periods.

Collective error signal:

The function of the relay contact between the clamps 21 and 22 can be switched over with coding switch 3:

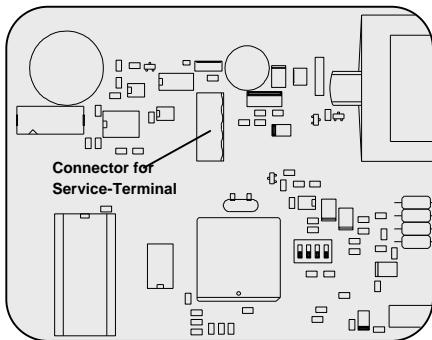
In the position OFF (lower switching position) the contact is closed during the filter operation and can, e.g. be used to operate a dosing equipment. In the position ON (top switching position) this contact is closed in case of an error (motor protection, flow monitor or break of sensor).

Priority circuit of the additional heating:

With the coding switch 4 you can activate a priority circuit of the temperature control. In the position OFF (lower switching position) the heating is only operated during the filter periods. In the position ON (top switching position) the temperature control is also in operation off the filter periods, so that the heating and the filter pump are automatically switched on at any time, if the temperature falls below the set value.

On delivery all 4 coding switches are in OFF position.

Service terminal:



For an optimum adjustment of the control to the various pool equipment's as well as to facilitate the installation and the error detection, an osf service terminal (item no. 3010000900) can be connected to this control unit. The terminal connector for this is placed on the circuit board inside the device. **Before opening the housing and plugging of the service terminal it is absolutely necessary to switch the control to zero potential!** In the display of the service terminal the first 4 lines of a diagnostic text appear after the control unit has been switched on, e.g.:

filter operation	Operation mode of the filter system
heating	Operation mode of the heating
water: 23,0°	measured water temperature
solar: 38,4°	measured collector temperature

Additional lines may be enquired with the keys and . Where required, the values in the **first** line may be changed after the key has been pressed.

1. Operating mode of the filter system

This line indicates the current mode of the filter system.

Following displays are possible:

<i>Control off</i>	The control has been switched off with the key .
<i>Filter system off</i>	The filter system is switched off.
<i>Filter operation</i>	The filter system has been switched on by the timer, the manual switch in the front lid or by the remote switch.
<i>Subsequent running time</i>	After the heating has been switched off the filter pump continues to run.
<i>Emergency switching on</i>	The filter pump has been switched on by the backwash control EUROTTRONIK or the level control NR-12-TRS-2.
<i>Priority circuit</i>	The filter pump has been switched on off the set filter periods by the temperature control because the filter pump operates priority switched.
<i>Pump locked</i>	The filter pump has been temporarily switched off by the backwash control EUROTTRONIK, the level control NR-12-TRS-2, the remote switch or by the protective winding contact.
<i>Motor protection</i>	The filter pump has been switched off because the electronic motor protection has triggered.
<i>Press key</i>	The filter pump has been switched off because a press key connected to the clamps 17 and 18 or a flow monitor have not started on time after the filter pump has been switched on.

Net phase missing The filter pump has been switched off because there is no current in all 3 net phases.

2. Operating mode of the heating

This line displays the current operating mode of the temperature control.

The following displays are possible:

<i>Controller off</i>	The heating has been switched off with the adjusting keys in the front lid.
<i>Heating off</i>	The heating has been switched off outside the filter periods.
<i>Heating locked</i>	The heating is locked because there is a priority circuit of the EUROTTRONIK or the level control NR-12-TRS-2, or because the filter pump has been switched off due to an error condition.
<i>Temp. reached</i>	The heating has been switched off because the set nominal temperature has been reached.
<i>Heating on</i>	The heating is switched on because the water temperature is below the set nominal temperature.
<i>Solar heating on</i>	The solar heating is switched on because the water temperature is below the set nominal temperature and because the collector is warmer than the pool water.

3. Water temperature

In this line the current water temperature is indicated. If this display does not match the actual temperature it can be readjusted with the adjusting controller on the circuit board (see section temperature control). A clockwise turning of the adjusting controller causes an increase of the displayed value. In case of a defect temperature sensor "break of sensor" is displayed. **Attention: In case of both temperature sensors having the same temperature, the solar sensor must not display higher values than the water temperature sensor, as otherwise the solar heating will not switch off.**

4. Solar temperature

This line indicates the current collector temperature. If the display does not match the actual temperature, it can be readjusted with the adjusting controller on the circuit board (see section temperature control). A clockwise turning of the adjusting controller thus causes an increase of the displayed value. In case of a defect temperature sensor "----" is displayed. **Attention: In case of both temperature sensors having the same temperature the solar sensor must not display higher values than the water temperature sensor, as otherwise the solar heating will not switch off.**

5. Nominal temperature

In this line the nominal temperature that has been set with the  in the front lid is displayed. If the temperature control has been switched off, „no heating“ is displayed.

6.-8. Motor current

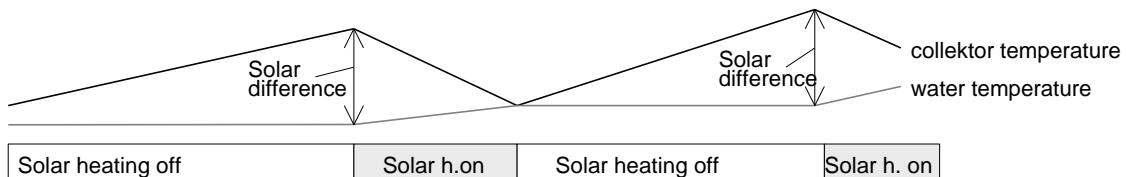
This line indicates the current power consumption of the filter pump in the 3 phases of the three-phase supply network.

9. Motor protection

This line indicates the current set release current of the electronic motor protection.

10. Solar difference

This line shows the amount the solar collector has to be warmer than the pool water, before the solar heating is switched on.



This value can be matched to the requirements of each corresponding solar equipment, if it is displayed in the **first** line of the service terminal:

1. On pressing the key the filter system is switched off and the following display appears:

**solar diff. 3 °
difference temp.
between water
and collector**

2. The temperature difference can be changed with the keys and . The smallest setting value is 0.5°, the largest is 10°.
3. If the key is pressed again the normal diagnostic display appear and the filter system continues to operate. The set value is automatically saved.

On delivery the set temperature difference is 3°.

11. Solar additional temperature

This line indicates the amount that may be exceeded by the set nominal temperature of the pool with solar heating, so that the insolation is optimally used during the day. This value may be matched to the corresponding requirements of each pool equipment, if it is displayed in the **first** line of the service terminal:

1. The filter system is switched off after pressing the key and the following display appears:

**solar add.: 5,0 °
overheating of
the water with
solar operation**

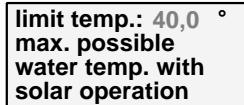
2. The temperature difference can be changed with the keys and . The smallest setting value is 0°, the largest is 15°.
3. If the key is pressed again the normal diagnostic display appears and the filter system continues to operate. The set value is automatically saved.

On delivery the set temperature difference is 5°.

12. Limit temperature

This line displays the maximum temperature where the solar heating is automatically switched off for safety reasons, independent of the set nominal value. This value can be matched to the corresponding requirements of each pool equipment if displayed in the **first** line of the service terminal:

1. On pressing the key  the filter system is switched off and the following display appears:



limit temp.: 40,0 °
max. possible
water temp. with
solar operation

2. The limit temperature can be changed with the keys  and  . The smallest setting value is 30°, the largest is 50°.
3. If the key  is pressed again the normal diagnostic display appears and the filter system continues to operate. The set value is automatically saved.

On delivery the set temperature difference is 40°. This limit temperature **only** has an effect on the solar heating.

13. Minimum time of the additional heating

In this line the minimum time where the additional heating is switched on or -off by the temperature control is indicated to avoid too short switching intervals. This value can be matched to the corresponding heating equipment if it is displayed in the **first** line of the service terminal:

1. On pressing the key  the filter system is switched off and the following display appears:



min. heating 120 s
min.switching
time of the
heating

2. With the keys  and  the minimum time can be changed in steps of 10s. The smallest setting value is 10s, the largest is 1800s (30 minutes).
3. If the key  is pressed again the normal diagnostic display appears and the filter system continues to operate. The set value is automatically saved.
4. The time set here only has an effect on the behaviour of the temperature control. On switching off the filter pump the additional heating is switched off immediately, independent from the set waiting time. On delivery a minimum time of 2 minutes is set.

14. Minimum time of the solar heating

This line indicates the minimum time where the solar heating is switched on and -off by the temperature control to avoid too short switching intervals. This value can be matched to the corresponding solar equipment if it is displayed in **first** line of the service terminal:

1. After the key  has been pressed, the filter system is switched off and the following display appears:



min.solar 120 s
min.switching
time of the
solar heating

2. With the keys Δ and ∇ the minimum time can be changed in steps of 10s. The smallest setting value is 10s, the largest is 1800s (30 minutes).
3. If the key \square is pressed again, the normal diagnostic display appears and the filter system continues to operate. The set value is automatically saved.

The here set time only has an effect on the behaviour of the temperature control. On switching off the filter pump the heating will be immediately switched off, independent from the set waiting time. On delivery a minimum time of 2 minutes is set.

15. Subsequent running of the filter pump

In this line it is indicated how long the filter pump continues to run after the additional heating has been switched off. This value can be matched to the corresponding filter system, if displayed in the **first** line of the service terminal:

1. On pressing the key \square the filter system is switched off and the following display appears:

subs.time	10 s
subsequent	
running time of	
the filter pump	

2. With the keys Δ and ∇ the starting time can be changed. The smallest setting value is 0s, the largest is 1800s.
3. If the key \square is pressed again the normal diagnostic display appears and the filter system continues to operate. The set value is automatically saved.

On delivery the subsequent running time of the filter pump is switched off (subsequent running time = 0).

16. Starting time of the filter pump

This line indicates the maximum allowed time of the filter pump as from switching on until reaching of the normal flow rate. If the contact of a flow monitor connected to the clamps 17 and 18 or a press key is not closed after switching on within this time, the filter pump is switched off again and the error signal light flashes. This value can be matched to the corresponding requirements of each filter equipment, if displayed in the **first** line of the service terminal:

1. On pressing the \square key the filter system is switched off and the following display appears:

startup time	10 s
pump startup	
time without	
flow monitoring	

2. With the keys Δ and ∇ the starting time can be changed. The smallest setting value is 5s, the largest is 20s.
3. If the key \square is pressed again the normal diagnostic display appears and the filter system continues to operate. The set value is automatically saved.

This time is only important in normal filter operation, on backwashing the press key is not interrogated. On delivery a starting time of 10s is set.

17. Operating time of pump

This line indicates the total number of operating hours of the filter pump.

18. Operating time of heating

This line indicates the total number of operating hours of the additional heating.

19. Solar operating time

This line indicates the total number of operating hours of the solar heating.

20. Motor protection counter

This line indicates how often the electronic motor protection has triggered.

21. Press key counter

This line indicates how often the flow monitor connected to the clamps 17 and 18 or the press key have triggered.

22. Phase failure counter

This line indicates how often the pump has been switched off due to net phase failure.

23. Backwash counter

This line indicates, how often EUROTTRONIK has started a backwash process.

The following lines enable the service technician to check the input signals and the output relays of the filter control

24. Emergency switching on of the NR-12-TRS-2:

This line indicates if the level control NR-12-TRS-2 has demanded an emergency switching on.

The following displays are possible:

<i>Emergency switching on OFF</i>	No emergency switching on or clamps 11 and 12 not connected
<i>Emergency switching on ON</i>	Emergency switching on demanded or clamps 11 and 12 connected

25. EUROTTRONIK backwash signal:

This line indicates if the EUROTTRONIK switches on the filter pump while washing back or rinsing clear.

The following displays are possible:

<i>EUROTTRONIK OFF</i>	No switching on command from the EUROTTRONIK
<i>EUROTTRONIK ON</i>	The EUROTTRONIK has switched on the filter pump

26. Remote switch:

This line indicates if the filter control has been switched on by the remote switch connected to the clamps 7 and 8.

The following displays are possible:

<i>Remote switch OFF</i>	The remote switch is switched off (contact open)
<i>Remote switch ON</i>	The remote switch is switched on (contact closed)

27. Flow monitor:

In this line the switching mode of the press key connected to the clamps 17 and 18 or the flow monitor is indicated.

The following displays are possible:

<i>Flow: OFF</i>	The contact in the flow monitor is open (the pump does not deliver)
<i>Flow: ON</i>	The contact in the flow monitor is closed (pump delivers)

28. Locking:

This line indicates if the filter system has been switched off by the EUROTTRONIK, NR-12-TRS-2, the protective winding contact or by a remote switch connected to the clamps 9 and 10.

The following displays are possible:

<i>Locking OFF</i>	The pump is switched off (one of the contacts is open)
<i>Locking ON</i>	The operation of the pump is released (all locking contacts are closed)

29. Operating mode of the timer:

This line indicates if the built-in timer operates as a daily or a weekly timer. The operating mode of the timer can be chosen with coding switch no.1.

The following displays are possible:

<i>Daily timer</i>	The programmed switching times are the same for each day
<i>Weekly timer</i>	You can program different switching times for each day of the week

On delivery the timer operates as a daily timer.

30. Function of the clamps 21 and 22:

This line indicates if the relay contact between the clamps 21 and 22 serves to control an additional dosing equipment or if it serves as a collective error signal. The function of this contact can be switched over with coding switch no. 3.

The following displays are possible:

<i>21 u.22 Dosing</i>	Coding switch no. 3 is in position OFF. The relay contact is closed if the pump is running in filter operation.
<i>21 u.22 Error</i>	Coding switch no. 3 is in position ON. The relay contact is closed in case of an error.

On delivery this contact operates to control an additional dosing equipment.

31. Priority circuit of the heating:

In this line it is indicated if the temperature control takes priority over the setting of the filter times. In case of priority circuit the filter pump can also be switched on by the temperature control outside the set filter times. Without priority the temperature control only operates during the filter periods. The priority circuit can be switched over with coding switch no. 4.

The following displays are possible:

<i>Priority OFF</i>	Coding switch no. 4 is in position OFF. The additional heating only operates during the filter periods.
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Priority ON

Coding switch no. 4 is in position ON. The temperature control also works outside the filter periods. If the water temperature falls below the set nominal temperature, the filter pump and the additional heating are automatically switched on.

On delivery the priority of the additional heating is switched off.

32. Priority circuit of the solar heating:

In this line it is indicated if the solar heating takes priority over the setting of the filter times. In case of priority circuit the filter pump may also be switched on by the temperature control outside the set filter times. Without priority the temperature control only operates during the filter periods. The priority circuit of the solar heating can be switched over with coding switch no. 2.

The following displays are possible:

Priority solar OFF

Coding switch no. 2 is in position ON. The solar heating only operates during the filter periods.

Priority solar ON

Coding switch no. 2 in position OFF. The solar heating also operates outside the filter periods. In case of insolation, the filter pump and the solar heating are automatically switched on.

On delivery the priority of the solar heating is switched on.

The following lines serve the manual control of the output relay.

33. Filter pump

If the operating mode of the filter pump is displayed in the **first** line of the service terminal, the pump can be manually switched on or –off:

1. On pressing the key  the filter system is switched off and the following display appears:

filter pump: on
pump can be
operated
manually !

2. With the key  the filter pump can be switched on and with the key  it can be switched off again. **Attention! The electronic motor protection is out of operation in this function!**
3. If the key  is pressed again the normal diagnostic display appears and the filter system continues to operate.

34. Solar operation

If the operating mode of the solar heating is displayed in the **first** line of the service terminal, it can be manually switched on or –off:

1. On pressing the key  the filter system is switched off and the following display appears:

solar system
manual operation
actuator: off
pump: off

2. With the key  the solar heating can now be switched on and with the key  it can be switched off again. After switching on the solar heating the following

display appears:

solar system
manual operation
actuator: on
pump: off

3. Now you can additionally switch on the filter pump with the key \triangle . **Attention!** **The electronic motor protection is out of operation in this function!** After the filter pump has been switched on, the following display appears:

solar system
manual operation
actuator: on
pump: on

4. If the key \square is pressed again the normal diagnostic display appears and the filter system continues to operate.

35. Heating

If the operating mode of the heating is indicated in the **first** line of the service terminal it can be manually switched on or –off:

1. After pressing the key \square the filter system is switched off and the following display appears:

heating
manual operation
heating: off
filter pump: off

2. With the key \triangle the additional heating can be switched on and with the key \square it can be switched off again. The filter pump is also automatically switched on.

Attention! The electronic motor protection is out of operation in this operating mode!

3. If the key \square is pressed again the normal diagnostic display appears and the filter system continues to operate.

36. Dosing equipment

If the operating mode of the dosing equipment is indicated in the **first** line of the service terminal, it can be manually switched on or –off:

1. After pressing the key \square the filter system is switched off and the following display appears:

dosing equip. on
filterpump on

2. With the key \triangle the dosing equipment can be switched on and with the key \square it can be switched off again. The filter pump is also automatically switched on.

Attention! The electronic motor protection is out of operation in this operating mode!

3. If the key \square is pressed again the normal diagnostic display appears and the filter system continues to operate.

37. Error signal

If the operating mode of the error signal is indicated in the **first** line of the service terminal, it can be manually switched on or –off:

1. After pressing the key the filter system is switched off and the following display appears:

error signal	on
manual operation	
output is	
switched on	

2. With the key the collective error signal can be switched on and with the key it can be switched off again.
3. If the key is pressed again the normal diagnostic display appears and the filter system continues to operate.

This function can only be used if the coding switch no. 3 is in ON position.

38. Additional output

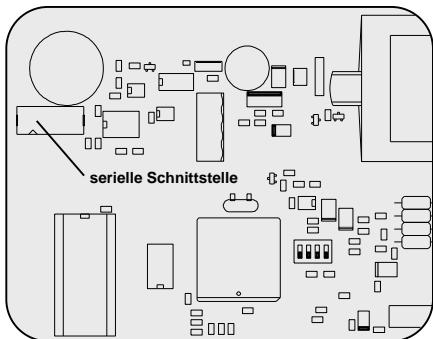
If the operating mode of the additional output is indicated in the **first** line of the service terminal, it can be manually switched on or –off:

1. After pressing the key the filter system is switched off and the following display appears:

aux. output	off
output can be	
operated	
manually !	

2. With the key the additional output can be switched on and with key it can be switched off again.
3. If the key is pressed again the normal diagnostic display appears and the filter system continues to operate.

Computer interface:



So that you can file the set values and the content of the operating hour counters with the service terminal, a PC can be connected to the built-in serial interface by using a special connecting line. The program that is delivered together with the connecting line reads out the saved values in the filter control and represents these in a clear from on the screen and, if required, saves this data on your PC.

We wish you a lot of fun and recreation in your swimming pool.

